Reducing Post Harvest Losses and Adding Value

Milk and Meat and Food Security

Decreasing losses and increasing income possibilities along milk and meat value chains increases food security

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Why meat and milk

- High value commodities – high protein – high price
- no. 1 agricultural commodities in Kenya
- Dairy >80% produced by smallholders
- Meat mainly / often produced by marginalised pastoral people
- Possibility of income generation
Top 10 agricultural commodities in Kenya

Milk and indigenous cattle meat no. 1 & 2 in value

Source: FAOSTAT 2012
Importance of pastoral livestock

<table>
<thead>
<tr>
<th>Country</th>
<th>Cattle</th>
<th>Sheep</th>
<th>Goats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Djibouti</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Somalia</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Sudan</td>
<td>82</td>
<td>80</td>
<td>73</td>
</tr>
<tr>
<td>Eritrea</td>
<td>63</td>
<td>65</td>
<td>52</td>
</tr>
<tr>
<td>Kenya</td>
<td>44</td>
<td>55</td>
<td>70</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>20</td>
<td>17</td>
<td>33</td>
</tr>
<tr>
<td>Uganda</td>
<td>23</td>
<td>17</td>
<td>16</td>
</tr>
</tbody>
</table>

Livestock kept in (agro-) pastoral systems (%)

<table>
<thead>
<tr>
<th>Nr. of animals in pastoral herds (mio)</th>
<th>Asset value (mio USD)</th>
<th>% Off take</th>
<th>Value of off- take yr⁻¹ (mio USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>3,6</td>
<td>524</td>
<td>10</td>
</tr>
<tr>
<td>Camels</td>
<td>0,9</td>
<td>132</td>
<td>2</td>
</tr>
<tr>
<td>Goats</td>
<td>5,7</td>
<td>123</td>
<td>7</td>
</tr>
<tr>
<td>Sheep</td>
<td>3,7</td>
<td>80</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>14,1</td>
<td>860</td>
<td>69,3</td>
</tr>
</tbody>
</table>

Source: Davies 2007
Target groups

- Smallholder dairy producers
- Pastoral livestock keepers
- Small and medium scale dairy and meat processors
- Poor rural labour force

Kenyan Vision 2030
Transformation of smallholder agriculture from subsistence to an innovative, commercially oriented sector to achieve 10% economic growth through:
- Improving market access especially for smallholders
- Value addition to farm and livestock produce before reaching local and external markets
35% (female) and 22% (male) of the working age population unemployed

50% of global employment in vulnerable jobs, ~80% in SSAfrica and South Asia

1.2 billion people (40% of the world’s labour force) below the poverty line (2USD)

1.5 billion food insecure people in rural areas

... hunger is a problem of poverty rather than a problem of the global availability of food.
Challenges

- Marginalised people disconnected from market
- Milk and meat - highly perishable products
- Microbiological hazards and zoonoses
The value chain describes the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers (Kaplinsky & Morris 2004).

Value chains – losses?

- Commodity Chains, Supply Chains, Production Chain
- Chains, Webs, Nets
- Presence of different stakeholders / actors
- Flow of matter and information in order deliver products to consumers

- Quantitative losses
- Qualitative losses
- Information losses
- Economic losses
Dairy post harvest losses:
- Spillage and contamination during milking
- Spoilage during transport
- Spoilage during processing and storage

When is “Harvest”? 
- Milking
- Sale of the animal

Meat post harvest losses:
- Weight loss during loading, transport and marketing
- Meat quality loss during handling (stress, bruises, cuts)
- Quality loss during slaughter
- Quality loss during storage
Dairy chain
Kenya Dairy Board
Inspection and licensing body

Dairy post harvest losses:
- Magnitude?
- Where?

Loss Hotspots?
Dairy Chain

Smallholder dairy farmer

Large dairy producer

Farm gate sales

Milk Traders (Hawkers)

Collection points

Large Dairy (e.g. New KCC, Brookside)

Cooperative / Milk Bar / Small Dairy

Retailers (shops, supermarkets)

Consumer

Dairy post harvest losses:
- Magnitude?
- Where?

Loss Hotspots?
Milk Traders & Kenya Dairy Board
Milk Bars & Kenya Dairy Board

CERTIFIED MILK BUSINESS
ENJOY THE BENEFITS OF GOOD QUALITY MILK FROM THIS OUTLET

KDB certified
Milk collection points
Meat chain
Kenya Veterinary Department Inspection and licensing body

Meat post harvest losses:
- Magnitude?
- Where?

Loss Hotspots?

Processing of:
- Hides & Skins
- Offals
- Bones
- Phosphorous

Local butcher → Slaughterhouse → Meat processors → Retailers (shops, supermarkets) → Consumer
Meat chain
Kenya Veterinary Department
Inspection and licensing body

Meat post harvest losses:
- Magnitude?
- Where?

Loss Hotspots?

Processing of:
Hides & Skins
Offals
Bones
Phosphorous

Retailers (shops, supermarkets)
Consumer

(Chart showing the meat chain from Pastoralists to Small Farmers, through producers, market services, processors, and finally to the consumer, with loss hotspots identified at various stages of the chain.)
Assumption:
Post harvest losses in the dairy and meat value chains are high and can be avoided / reduced - or - that chains are operating “inefficient” that means...

... there is potential ...

... to modify the flow of material and information to

a) reduce losses (quality, quantity, information, value/money), and
b) add value (product modification, additional information)
Areas for Research

- Identify main points along value chains where losses occur (loss hotspots)
- Quantify losses and assess their economic impact for the different actors in the value chain
- Identify ways to reduce losses through improved information and material flow
- Investigate technical and institutional preconditions for development of decentralised small and medium scale processing facilities
- Develop exemplary dairy and meat products and optimise process parameters
- Investigate options for branded / certified products (regional, speciality, low carbon, environmentally friendly, organic...
In response to the GlobE call...

(German African Research Network, Systems view “Food System”, Transdisciplinarity i.e. research stimulated and informed by actors – results applicable – transfer activities)

... Reload Research will...

- Analyse two exemplary value chains (milk and meat) for their fluxes of material and information between actors
- Identify improvement potential in an actor / community based research approach identify
- Devise and test promising improvement options through actor / community administered research actions
- Accompany this actor-led experimentation through monitoring and scientific research led by teams of African and German researches from NARIs, IARCs and German partners